Sioux Falls 1906

Sioux City
to
Sioux Falls

Kester Home
Vandergrift

Blair -	8.21 P.M.
De Soto	8.31 P.M.
Calhoun	8.38 P.M.
Coffman	8.45 P.M.
Florence	8.58 P.M.
Omaha	9.10 P.M.

Sioux Falls Correlation

1. A mile N.E. of R.R. along Ill. Cent. R.R.
2. N. & W. of Tracy.

Hamilton Co.

1. From Palisade to 2 mi. N. Lies on Sioux Q.-
2. Just E. of Town - Rocks granite - deep
3. In R.R. cut - on Sioux City branch

Sioux Falls, So. Dak

Aug. 15, 1906.

Went out N.E. along Ill. Cent. R.R. to series of cuts about a mile N.E. of Ill. Cent. depot.

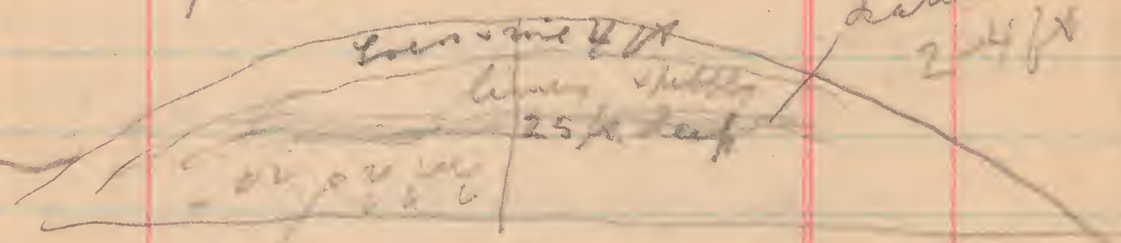
1st cut.

This is about 25 ft. deep & on the left shows a loess like layer 4 ft. deep (including soil which is light) & it is a little heavier than ordinary loess, but appears to be it. At a height of about 14 ft. there is a horizontal band 2 to 4 ft. deep, of a fine gravelly soil & small rock & of dark brown color. Above it is fine yellow

pebbly clay with lime & below it (lower ½ of cut) coarse gravel & boulders. Wisconsin drift.

See samples & loess.

1st cut - S. side.



cut about 300 ft. long

Boulders, etc.

The North side is similar

2nd cut, - really a continuation of 1st - is about as deep, but perhaps twice as long.

It has over 5 ft. of yellow loess on top, with streaks of fine sand.

Then a slightly pebbly yellow layer; transition

gradual, which is till
like loess, having pebbles
which are not numerous.
Then follows a nearly
horizontal layer of blue
clay with a few pebbles &
some irregular small
nodules, the change to
this being quite abrupt,
but no oxidized layer.
This blue stuff is
about 3 ft. deep.
Then follows gravelly
drift, with fewer
large red boulders than
occur in no. 1.

Cut. 2 - Knoll. Loess, without clear pebbles 5 ft. few pebbles 1 ft.

3 Blue drift 3 ft.
4 Darker pebbly drift 15 ft.

Cover not measured, as there is covered talus.

The blue layer no. 3 -
seems to correspond to the
dark rusty layer in no.
1.
No. 3 seems to be about
3 ft. deep & then comes
a darker mass of
clay with mostly small
pebbles - extending
nearly to base of cut
which is obscured by
talus. (See sample)

Cut 3 - Back of this (5)
a man has a cut 6 ft.
& this shows following -
extending down below
Rd.
6 ft. Dark layer 4 of cut 2.
Same loess like clay, but
heavy, & with occasional
pebbles. Also a few
very large iron boulders,
nearly vertical.

This bed is 2-4 ft. deep.
Then follows cross bedded sand with gravel. Note the thickening.

Cut 3. b.

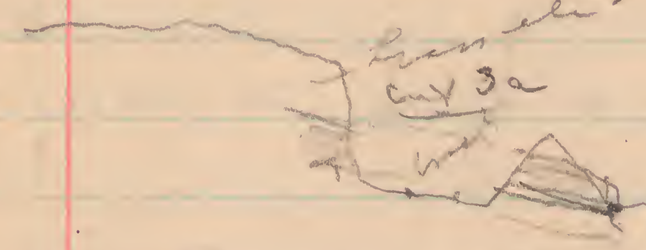
1 Dark = no. 4 of cut 2

2 Loess-like, with pebbles 2-4 ft.

3 Stratified & interbedded sand & gravels.

Cut 3-a also RR shows small part of yellow clay above, with pebbles in lower part, & then the black bed = No. 1 in cut 3 b.

There are a good many pebbles + some cobbles in lower part of this.
This is again nearly horizontal.



Profile looking S (E. of Cuts 1 & 2 pass through bridge of double ridge.

Band may be low form with bones in the sand below. Also bones in the dark clay.

The big cut on the new Dakota Central (branch of Sel. Cut.) near the

penitentiary is all
a yellow drift clay
with small pebbles,
excepting the upper
3 or 4 ft which is sandy
loamy, but more like
joint clay in lower
part. The upper
part of drift has
a sandier & lighter
oxidized color,
The cuts at the brewery
are badly slumped
and nothing could be
done without much
excavation.
Moraine hill extends
down the Sioux on the
W. side as far as I could
see, & across to E. side.

The Big Sioux here runs
over numerous ledges of
bowlders of Sioux Quartzite,
the water being very
swift on these rapids,
or in quiet pools between
rapids. There are
no large bars of sand
or gravel.

Rock river at Luverne is
similar, except that not
great ledges of Sioux Q.
appear. It shows the
finest beds, with water
below each showing over
bars of coarse gravel,
& small bars of sand
& mud.

Our prairie streams as
they appeared in the

Wisconsin drainage
Iowa there were
no bars, as the
streams were
chiefly sloughs,
with the edges & banks
densely covered with
vegetation.

Most of loess material
not carried far by
wind. Glacial and
streams brought it
near & then wind
distributed it.

Evidence:
1- Material is like
that which water
are constantly washing
out & depositing in
segregation & bodies.
2 Distribution along
broad valleys where

with large bars at low water,
Cases:
Missouri
Mississippi
Platte -
Iowa.
(How about Cedar?)
Illinois
Wabash
Ohio -
3- Finer material far from
streams, coarser near,
4- Special localities in
which wind action is
manifest:
Riverside, near Sioux Cy.
Bradison Bluff.
New Harmony, Ind.
Mount St. Mary, Ind.
Hooper, Neb.
St. Joseph, Mo.

5- Sands such as are in timber, skirting streams.

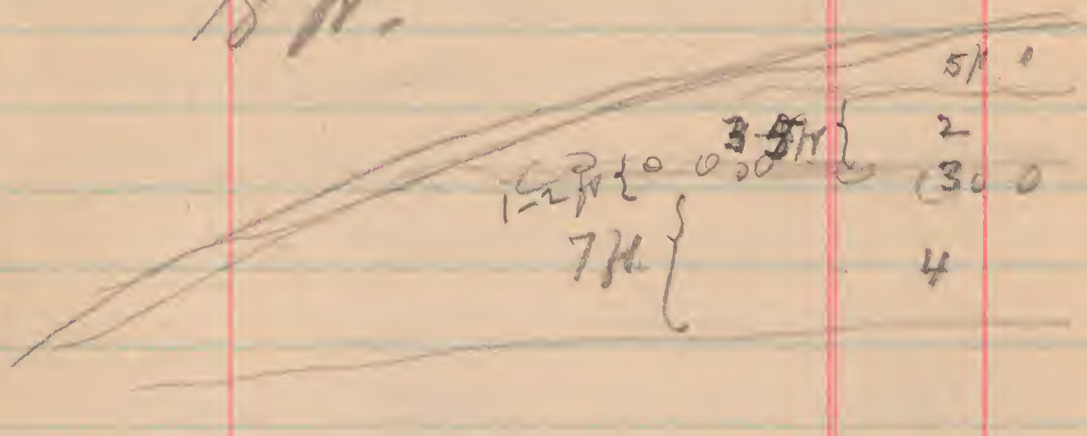
Beaver Creek, Yuma
Aug. 15, 1906.
The cut just east of depot show yellow loamy stuff like that in cuts 1 & 2 at Laverne, which has some wash & a few pebbles below. It seem to get sandier downward.
I went east 1/5 mile & saw two cuts beyond. At 1/5 mi. there is one and at 1 mi. another like all these cuts, long & low, about 5-8 ft., cutting broad low ridges. Another begin at 1/2 mi. from depot & runs over 500 ft. W.
The stratum is remarkably

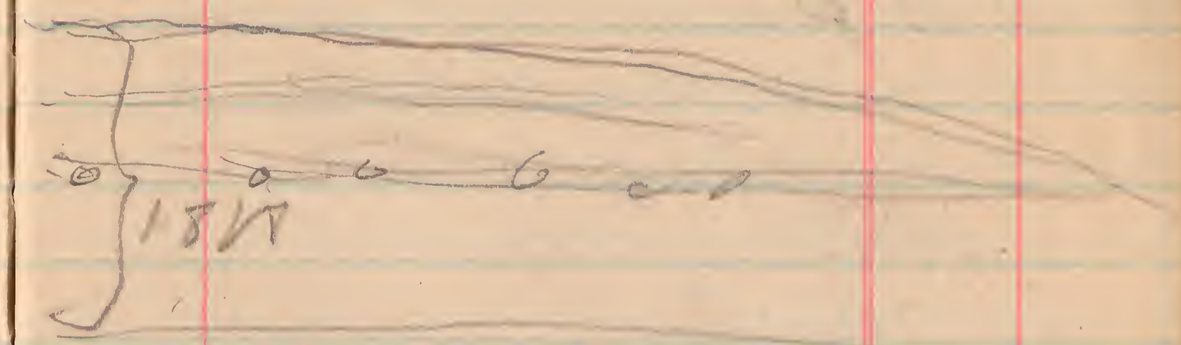
uniform in all
these.
There is an abdormal
loessy, brownish layer,
2 or 3 ft., then
yellowish clay which
shades down into
what in many cases
is loose sand.
There are minute
pebbles commonly
in this clayey part,
scarcely more than grain
of sand.
Even if all this day
were glacial, it
has still not been
seen worked over by
various agencies &
brought to the
surface

The cut beginning at
½ mi out gradually
recedes from pebbles. Some more
limestone pebbles after
Ashton cut ⅓ of a
mile out show more
+ coarse sand + in layer just
iron streaks (see
sample.
These cuts all look
remarkably like cut
3. E. of Lawrence

A small stream
between Valley Spring & ▽
Brandon shows quiet
pools and boulder
rapids,

Went back to cut 3 a
along Ill. Cent. R.R.
of Sioux Falls.
Don't like the
whole cut is about
15 ft.





1- is fine sand - slightly clayey. Contains numerous nodules.
2- a loess with laminations, black spots, iron stains & old humated land from which down over 4.
3- Gravel & boulders - A gravel has spread a little gravel after digging fails to in the deposit 2, a surface at 3, but after- bring any gravel to view.
4- a blind loess-like but occasionally having pebbles & ice stamples. material, with laminations, coarse sand grains & small

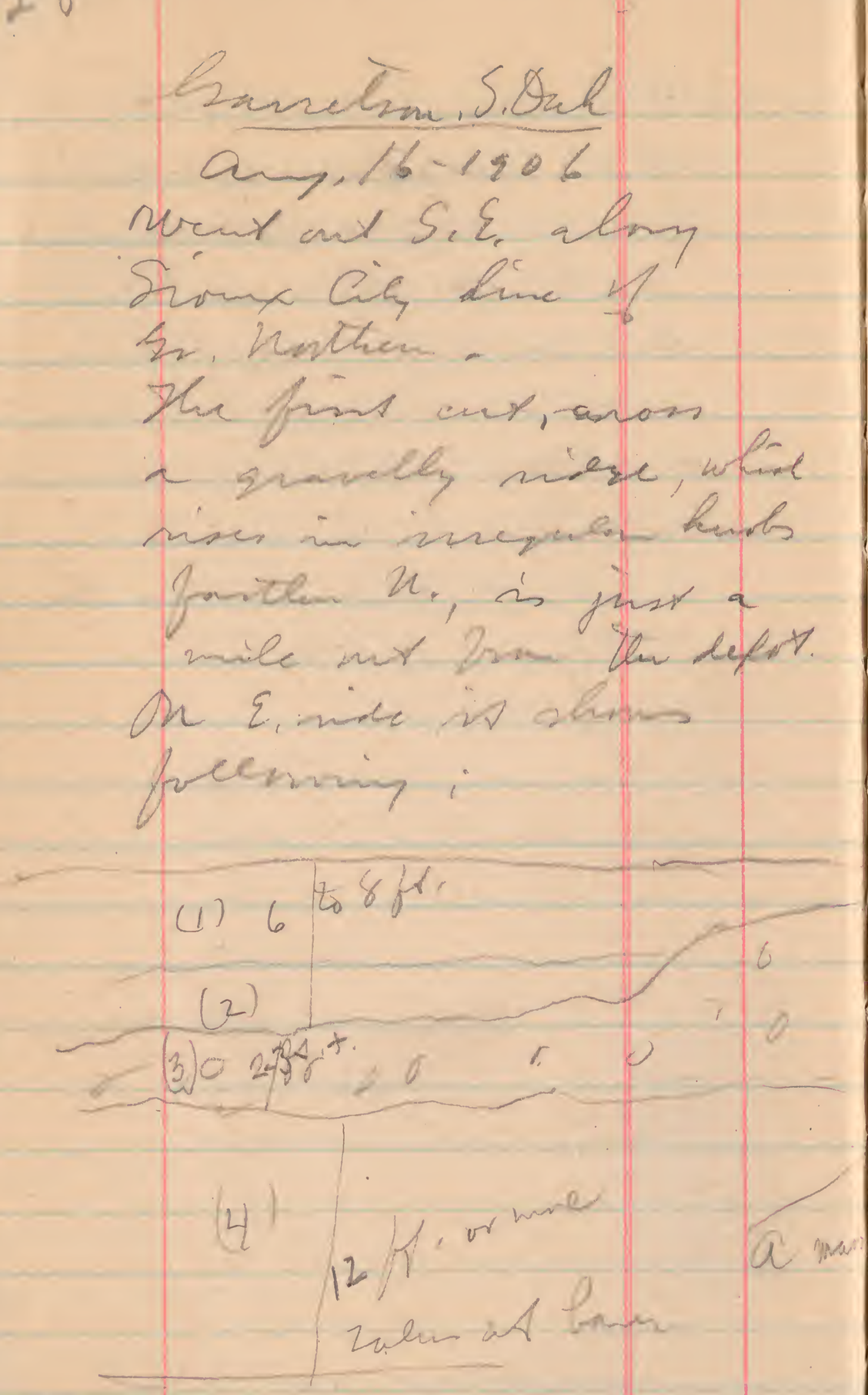
Cut 2 N. side (bank cut)
is similar to 3 a,
1 – 5 ft. + 4 rotten brown
top.
2 – about 4 ft. Black
loam
3 – sandy broken in
clay 1 ft +
4 About 12 ft +
here containing some
sand grains & minute
pebbles + in lower
part bearing distinctly
like joint clay.
The lines are not
sharp excepting
between 3 + its
neighbors both
ways:
3–4 is especially
clear.

In cut #– nos
1 + 2 adjoin, but
2 may have minute
fault (see note 4
arm) + the next
wide loam below
with it, which exists
here, is illicit +
has been broken
Atlan in 3 + 2

Garretson, S. Dak
Aug. 16-1906

Went out S.E. along Sioux City line of Gr. Northern -

The first cut, across a gravelly ridge, which rises in irregular knobs Jonathan N., is just a mile out from the depot. On E. side it shows following:



no 1- Is brownish soil & loamy stuff & leaves mixed from below & blends with no. 2, which is more

no 2 compact, & contains occasional pebbles. This is brownish yellow - a few lime nodules.

no. 3 - Irregularly bedded layers of sand & gravel - Looks & worked by R.R. for ballast

no. 4 - Yellow drift clay with some pebbles & many lime nodules

striation cut.

The bedding of sand shows similar layers, but irregular. The pebbles in no. 3 are nearly all red. The boulders in no. 3 are nearly all red.

A small out burn below wagon road is / - washed, shows no boulders, & is shift. A larger one burn wagon road shows drifts & upturned trees with some limb removal.
I went N. on this wagon road, & was / to / pinion knobs. I found in a bare cut in road, a light yellow tan exposure. It has numerous small lime nodules. A like upland unfossiliferous ash on the road / A few pebbles observed

below 4 & 5 ft. down & the material is more compact & more drab. A little further down the slope & N. drift (no) effloresc. Near surface, some grayish boulders But loess extends pretty well down to end of cut

The country about Garnetson is much broken, like exposures Kansas with some larger knobs, no. 5, to the town between sizes. & igneous Gilet Rock in the flows by. It is in places shaley, both the latter

and gravel & boulder bars, and also has quiet pools, with sometimes pond lilies & other aquatic plants along the edges.

Buck & Sioux Falls
Aug. 16, 1915

Cut 5 along Ill. Cent. R.R. & Sioux Falls is just beyond the M. & S. bridge over it. It is with low & hilly bare, & show abundant boulder bars about at its base.
Above this is yellow stuff, with much fine sand & also numerous Crinoid stems (round & irregular).

Cut 6 is along the above mentioned bridge road, between cuts 4 & 5 on R.R. 6a is just S. of R.R. & 6b north. 6a is all yellow Kansan sandy (fine) stuff.

7

Cut 7b - shows 5 or 6 ft. of this same stuff above & then runs the almost horizontal band of boulders & gravel, as below. On E. side of road it contains one large angular block of red quartzite (Jasper) Below the gravel band (which is slightly variable in thickness but mostly only 1-3 ft) there is yellow drift clay with small pebbles. This cut is remarkably like the Gamston cut. The apparent layer (Sandy) here as at Gamston,

and in other cuts, where weathered shows horizontal (?) lamination.

Cut 8 is N. on same road, across a damp valley N. of cut 7. It shows much darker, fine yellow sandy clay throughout but the lines are not distinct.

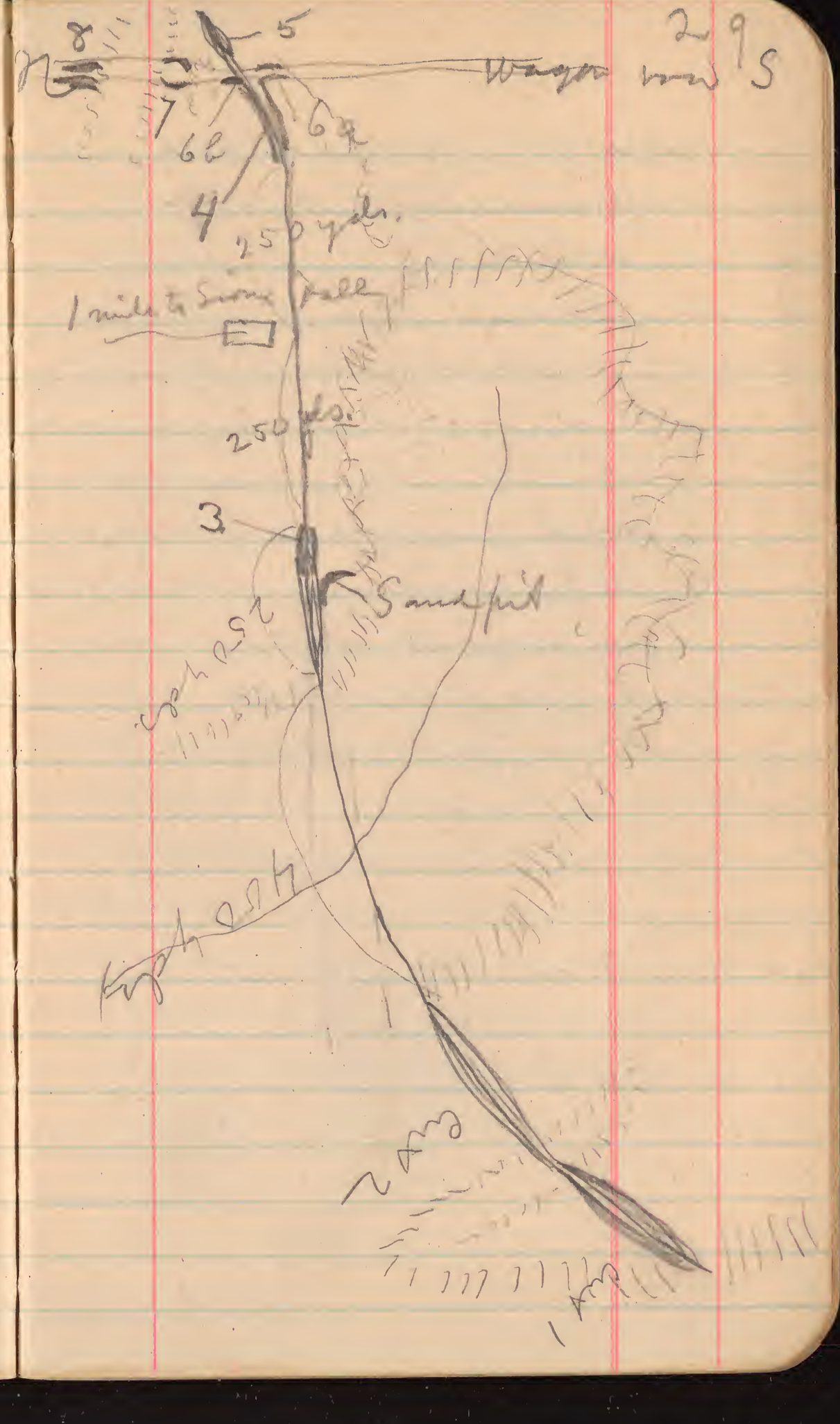
In road cut 6 & a bit red oxidized sandy stuff, with black seams, in both banks.

A deep narrow cut between 6 & 7. 6b. shows little boulder oxidized stuff. The latter seems to boulder band.

(See also cut 1.

Cut 4 is really a continuation of 6b, along Rk. f but doesn't show so much of the dug stuff. There is one brown layer above (bus:), then the sandy layer, the two 5-½ ft deep. Then the bowldery bus x finely yellow drift clay with pebbles. The boulders, band in again nearly horizontal.

R. side cut 4.



A small cut on
M. Vale RR just W. of
"One-mile" post also
shows gravelly layer
& yellow strip above.

Sand pit back of cut 3.

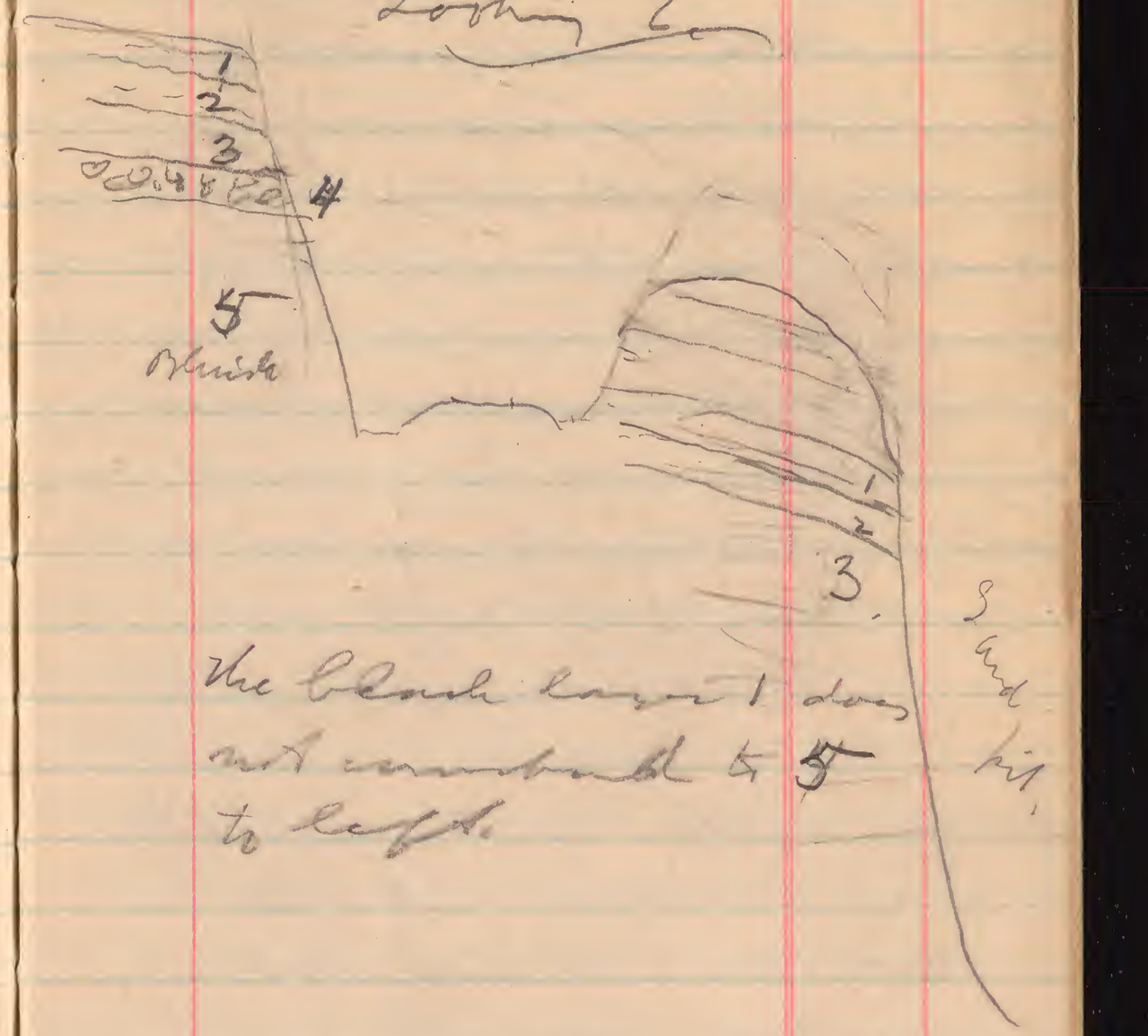
(1) 4-6 ft. | Dark clay with
small pebbles,

(2) 2-4 ft. | Sand | clay, bluish yellow, almost
no pebbles

(3) Stratified sands
& clay

No 2 is strongly oxidized
above, - appearing like
old surface.

Cut 3
Looking E.



The blank layer 1 does
not correlate & 5
to left.

In examining the materials
in 1, 2, 3 & 5 carefully &
find:

1- It is quite compact clay, yellow
(dark from humus) & seemingly
young loess. about 2 ft.

Shales below into:

No. 2 - which is a layer of yellow, rather loose very fine somewhat sohering sand.

No. 4 - Gravel bed. Lies between no 3 x 4) + (4 + 5) are quite sharp.

No 3 a layer of yellow loess, containg dark spots, showing lamination in fractures, & with blue tubes in the yellow loess somewhat like those in Kansan buckeyes at Iowa City.

Has Is a Kansan loess: shows lamination in fracture, iron tubules, (vertical or nearly so), & with charderistic Kansan blue loess color.

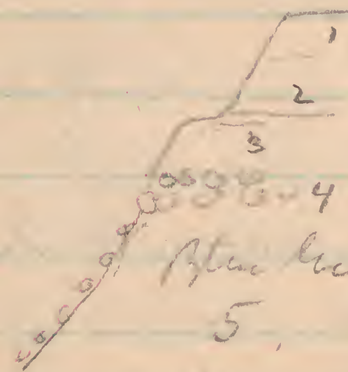
April 2

The line between this &

no. 4 is very sharp. I rounded carefully in no. 4, taking bank at various points, but same result.

Took sample of no 1 1 ft. from top. There is almost no soil here. This cut showing 1, 2, 3, & 5 was made at the highest point of cut, & hence of ridge.

Nos 1 & 2 work more easily than 3, & there is a little bench - formed by 3



The bubbles & boulders from 4 work out & strand all over 5 on surface

No. 5. becomes muchy (blue joint clay) within about 2 ft. (or more known W. ens) of the bottom of cut. The pebbles are small. I saw some dark gravelly layer on S. side of cut, & if it is no. 1 of the section.

Nos. 1, 2 & 3 become known westward (also eastward) & 4 & 5 are about horizontal.

The small ridges here & there scattered all over bottom come from the lower part of 2, & from 3,

where they are scattered.

Cut no 2 - Extends down thru 3, as RR drops.

1 & 2 are distinct. 3 probably below it a narrow band of yellow muchy joint clay with a few very small pebbles.

4 is least distinct in this cut.

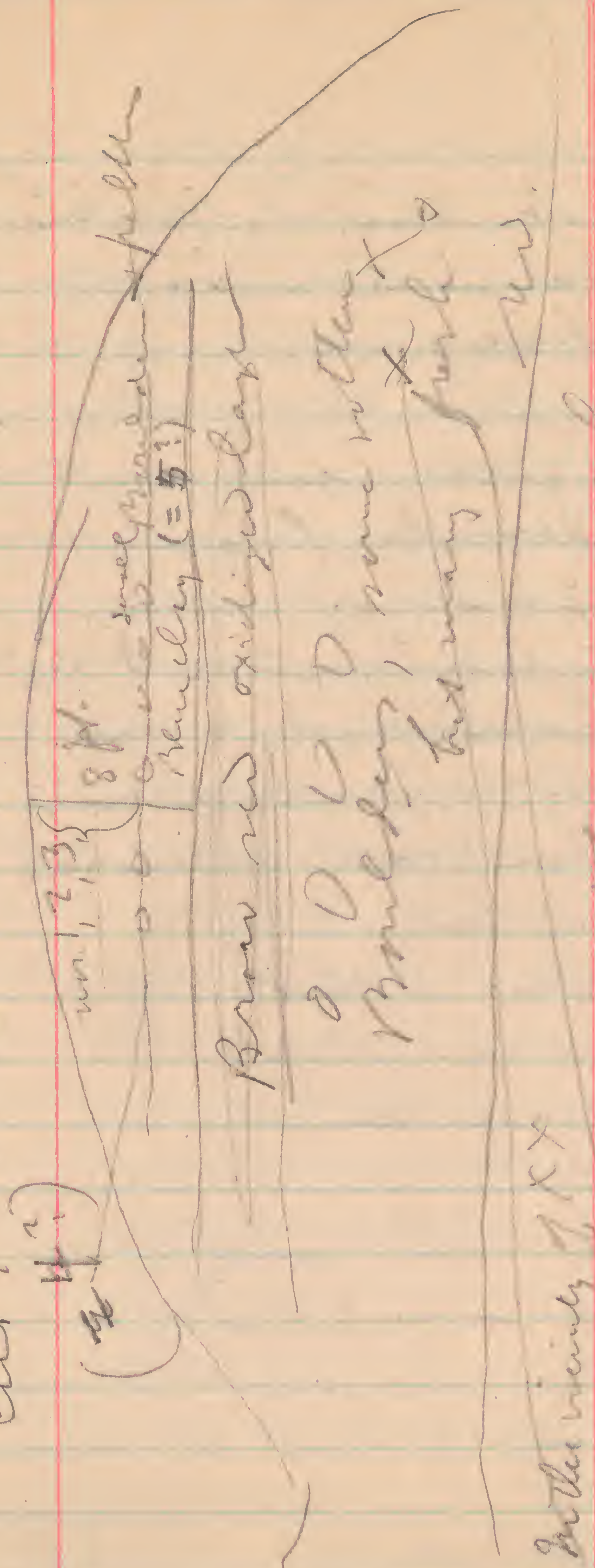
5 is thick & with the possible exception of a little on the S. side, it has no bed, being muchy blue joint clay, with small pebbles. You can tell the

difference in texture at once when digging.

The sandy upper part (2) & pockets of sand below in drift would indicate there may have been much more sand exposed than now, for more of loess. The river must have cut out & carried away much.

Nodules (small irreg.) are very plentiful in nos 2 & 3.

Cut 1 - S. side Ill. Cent - Sioux Falls



In the vicinity the lowest yellow till shows clearly.

Some of these may have come from upper part?

No 3, when developed, shows a tendency to become more confined with blue streaks below in characteristic loess fashion.

The very undulating layer in cut 1 causes it to run about a level with No 4 in cut 2 etc, It is probably that

Spend the night at the Tetron, Sioux Falls. Hot, hot, hot.

1206 40

Aug. 17 — Friday

Left on the 6a Rocket at 7.40 AM. for Yankton Cuts some miles out show fine light gravelly drift to top. Is it all gravel, or some overwash?
For a few miles the country is rather rough & then becomes a flatter plain
The small cuts on this plain show gravel below & a soil 1 or 2 ft. deep which becomes yellow below.
Between Davis & Viborg a few swamps & pools appeared.

Beyond Viborg ponds
& swamps are also
frequent. Two
shows marshy bases.
The vicinity of Irene
is swampy &
somewhat more
rolling.
Beyond Irene the
hills are higher,
rounder & with a
few rather large boulders
on surface.
Looks rather moraine.
Some distance beyond
Irene we enter a
valley with slopes
showing timber patches
(burned, etc)
Quite some drift
Rock ledges also
show.

Valley is right at
the foot of the Missouri
bluffs. Here low &
rounded.
The R.R. then runs
across a broad
alluvial plain with
the low hills far
to the N. & W. (probably
3-5 miles.
At Mission Hill
there is a low
elevation, or terrace?
Coming right into
town. This seems
to continue for a
mile or so to low
bluffs. (Is all the
same terrace)
Rises back as
formerly to the bluffs.
There is to the bluffs.

Out of Yankton it
is ample for a little
distance, & then the
same broad plain
stretches out into
space.
At Springfield the
country gets rougher.

On train from Tyndall
to Springfield I met
Mr. Frazee President
of the State Normal
at Springfield.
whose wife was
a Rankin, sister
of Evangeline & Luella.

From Springfield down
we could see the
high bluffs & knobs
along the Missouri
close to the river on
the S. side, & a
mile or two away on
our side close to
the R.R.
Rocky cliffs also
on both sides.
At Running Water the
bluffs are close to
the river on the N.
side, rocky cliffs
appearing above the
village.
On the S. side the
rounded bluffs are
~~a little~~ more remote,
but the valley is
comparatively narrow

and is bordered by
high rounded hills,
which in places show
rock at the base.
Left for Verdigre
same evening.

Aug. 18 1906 - Sat. Verdigre is located in the valley of the Verdigris river, below hills which rise on the E. about 300 ft. above the valley, & on W. a little less. On the E. the hills are distinctly moraine & gravelly and appear on the surface. There are bowlders & conglomerate, & smaller boulders &

pebbles of various types (See Photos of hills). In the shelter of valleys, & especially on the west slopes & bluffs there are clumps of timber, & scrub trees. Mr. Schmidt says that 20 yrs. ago there were more timber but since fires have ceased they have grown well. The trees are chiefly burr oak & a few ash, elm, & box elder. On bottom land are cottonwood, box elder, willow, ash, elm, & plum, &c. The Verdigre river is narrow & swift, 2-8 ft. deep, with gravelly bars where

any often as dark,
and they are few.
It has a narrow
channel,
The Niobrara has (about a mile)
a rather broad valley,
with the river hugging
the S. shore as far
as we could see.
The bluffs on S. side have
knuckle-like graves in
characteristic fashion, — not
natural. The channel
is studded by boulders
& considered extant.
Offr. Schmidt says that
above Pinkerville the
valley narrows & the
river is near N. bluffs.
I found that in these
knuckles buriels gave
there skin or found flesh

soil from a few inches
to a foot or more deep,
with loose sand showing
occasional gravel.
On the divides the
topography slopes down S.
W. Low grass & surface
vegetation as cactus,
grama, cacti, etc.
Took two samples of
soil.
I also found in these
graves a number of
lance nails (wrought)
The territory between
the Niobrara & Missouri
& these S. E. part
Nebraska, is deadly
monotonous.
Town Pinkerville I
was told there were
formerly thirty

sands on the hills, but they are now overgrown. Stopped to see Mrs. Friend (Reiche)

Aug. 19 Sunday

Wrote, got wheel, &c. D.K. Schmidt has a Son, Wm., who wants to know about entrance requirements to S.U., attend at Fremont.

A young man interested in land, but, got his name from P.K.S.

Aug. 20. Mon.

Left Bon Ton at P.M. Ran Wardigre to Wayne Winnebago county is rough. Then a plain until near Norfolk (8.) hill after.

There come down to the R.R. a little below Norfolk 3 ft. They are rounded & flattened, & not very high. Down S. & W. a flat plain.

The hills follow the R.R. on E. side within ½ mile to Blessing.

They are decidedly morainic in appearance.

The plain to S. & W. stretches far out.

Occasional low outlier
ridges (mesas) appear
in the interval
toward Stanton. The
hills come close to
R.R. & south across
rather broad plain,
hills appear.
They are S. of the
Elkhorn river
at Stanton the
morainic knob are
only 2 or 3 miles
from the depot.
Below Stanton &
Elkhorn valley narrows
narrower & the hills
on E. & W. lower.
Low hills also appear
on S. side of valley.
The hills toward Pilger
become lower & more

about ½ to ¾ of a mile back
from R.R.

Aug. 20 - 1906

From Penn to West Pt.

Down S side of Schuylkill.

Found woody plants:

Prunus	Sandbar willow
Rhus sp.	Cottonwood
Acer sp.	Box Elder
Hackberry (crassifolia)	Missouri willow
Wild Plum	Golden Currant
Chokecherry	Fallfruiting Sumac
Xanthoxylum	Amorpha fruticosa
Green ash	Cephalanthus
Rosa blanda	Walnut
Rubus occidentalis	Lead plant
Rhus radicans	Shepherdia
" glabra	Crataegus mollis
Ampelopsis	Poison oak
Vitis	Bittersweet
Hazel	Menispermum
Symphoricarpos vulgaris	Ky. Coffeebean
Cornus paniculata	
Symphoricarpos occidentalis	
Rubus occidentalis	

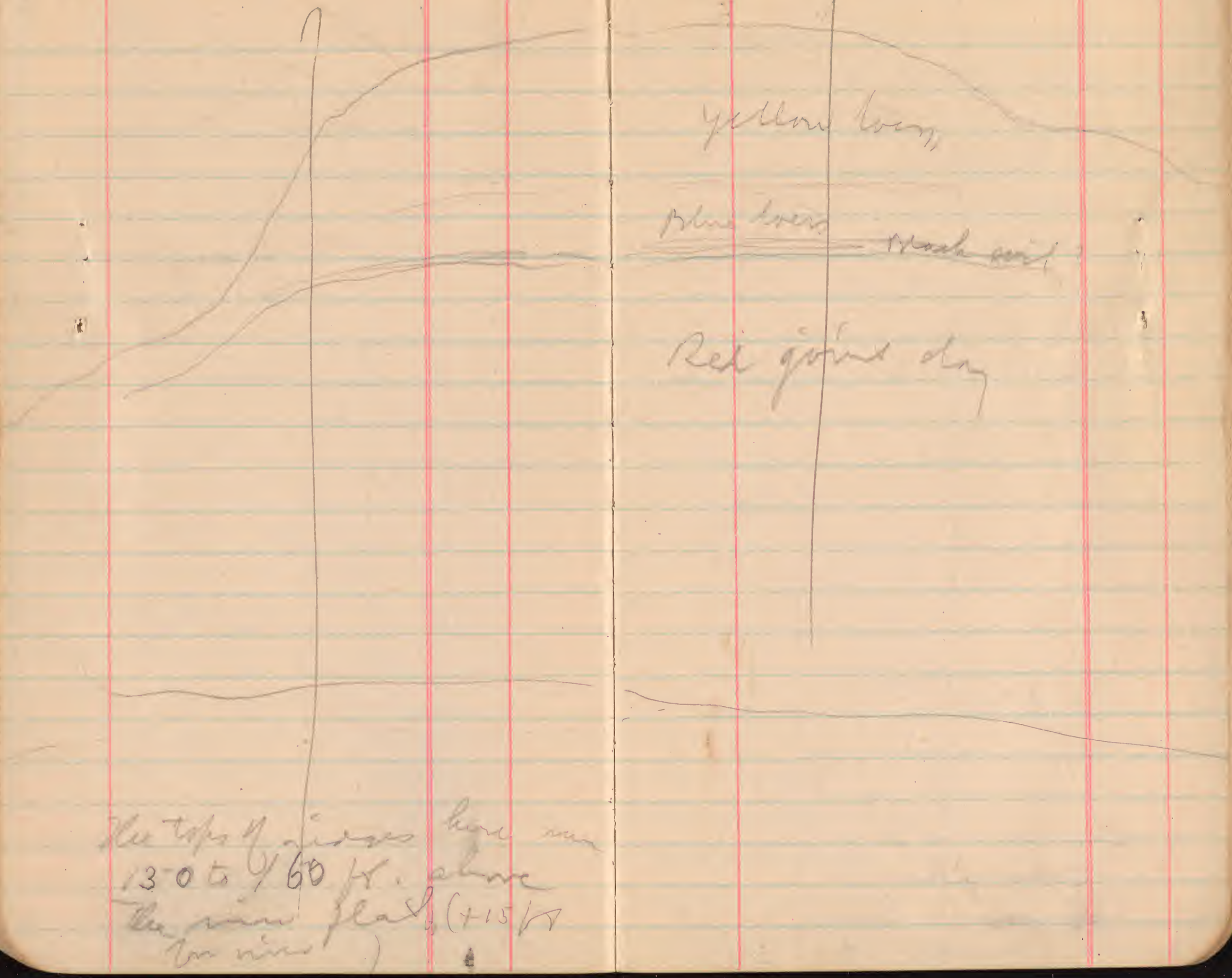
Cut 1 - Sec. 2 - High cut, all in rather fine drift, yellow with blue mottles & streaks in lower part.

Cut 2 A double high cut in Sec. 12.

At mouth of drift hole in no. 1, cut is cut by 12 or more feet of fine yellow loess, scarcely showing laminæ, even when broken, with very few rounded nodules & no shells. Sample specially taken lower part.

Cut 3 - is a big one.
The top is firm
yellow fine sandy
loam with some calcium
nodules.
This rests on a red
gravel clay - no
fossils in first
exposed, which
runs 65 ft. above
the low run plain
the second part is
observed by taking
Between the two V.
firm clay there is
a dark band 2-3
ft thick, rich in iron, which
looks like an old
sandy soil.
above it for about 2
ft the stuff is stratified

+ then run out what
appears to be
blue loess with
very large iron tubes
the lowest loess
blue + stands up
into the 80 ft
run ft. above
the fossils + nodules
in the white
higher yellow loess
I think the second
part of the loess at
40 ft.
the run on the hill top
is firm well clay
until through 50 ft.
a clay + stuff
fine sand.



Blue tops 4 lines here run
130 to 160 ft. above
the main flat (+15 ft
on rise)

Wood runs to bank
at end 2a —
new sec. of sec. 7.
I think 3 is my old
end.
At 2a the river
runs up close to the
bluff & is so not
possible to get to it.

The timber in sec. 1
(2½) W/2 (2½) certainly
looks scanning. W
is full of deep
ravines & very narrow
ridges.
S. & SW of 12 so far
as I could see &
also S.E. except where
river bottom intervenes
there seems to be a
nothing Kansan surface,

Aug. 21 – 06

E. along upper (N.) road from Lex & Rt., Neb.

Cut 1 – is N. 7 rods & exten[ds] to the 3rd hill from Seklom bottoms going E. It was made for brick clay & shows especially the same stratum as cut 3. below Access.

Less – light yellow & abut 30 ft. Sand

(1) See samples

See samples

(2) Blackish-brown 5 & 6 ft.

See samples of yellowish sandy joint clay (hard)

(3) 12 ft reduced terrace W. end of his; not extend Eastward because road runs up.

I could find no bottle in run 2 & 3

The lower part of 1 (⅓ to ½ of it) is fine sand which when wet mixed with water. There is also a layer of fine sand above the lower part & a heavy clay like that in cut 3 below Access & above is brown like a sandy clay loam. This has a lot of iron in it (i.e. the ferruginous layer) No. 3 has a lot of black laminations (bedding, not plants) mainly of mica (see sample)

63

no. 1 in unit 1

1

2

3

Limestone

Green clay

Limestone

Conglomeratic limestone

Black soil

Ontlying hill

I found no fossils in this section.

64

W. end of unit 1 - 2

Dip 10° S.

Dip 10° S.

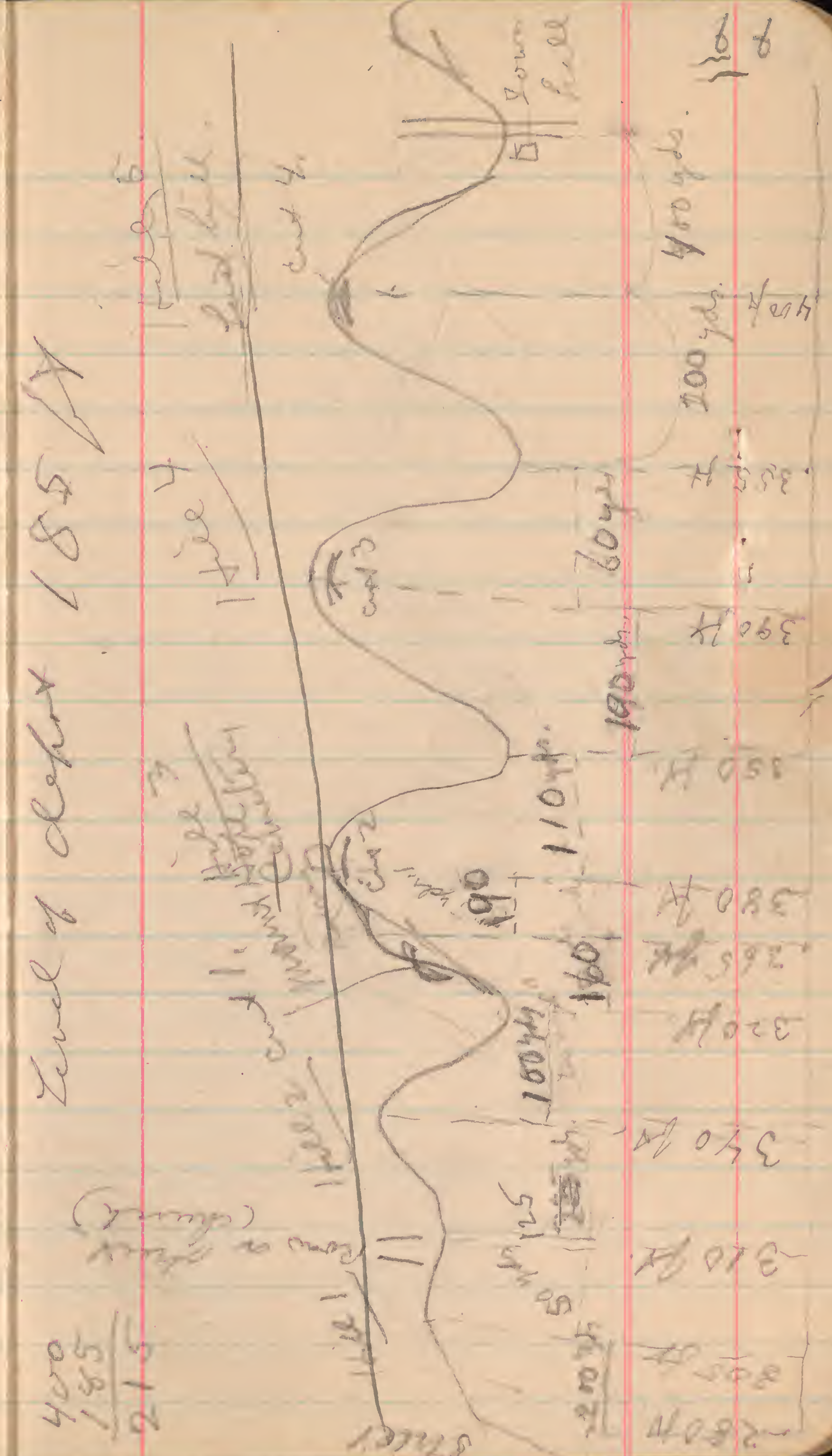
Dip 10° S.

The Coal Measures

Carboniferous Limestone

Devonian

E. of the town-hall
(both in sec: 35
as far as I could see
the country has Kansan
topography, & the
section says there is no
sand, but a yellow clay
soil (loess!).
Hills 4 & 5 are higher
measurably than the
rolling Kansan both
W. (across river) & E. as far
as the eye could reach.
They are as high as
the highest points at
cut 3 etc. below Brewery.
The ridges run almost
straight N. here, &
the section says they
run in a streak a
mile or two wide to
Steinbus on E. side of river,



and coming to W.
A creek at Station
They strike as far
as he has seen
to Holt Co.

Cut 4 on hill 5. shows
Some sand rock but
to W. only where cut
no surface [illegible] and to
A top [illegible]
[illegible]
Hill 5 is the highest
land seen hill 4 then
3, then 2, then 1.
The whole ridge testing
has a sand dune
aspect.
The electro rays showing
dry seasons & in
Spring before grass

gets north the sand
shifts a great deal.

The barometer at top of
hill 5 registers 5
ft. higher than hill
at cut 3, - morning
no change took place
since yesterday.
The level shows them
about same.
All elevation are
taken on returning surface
& wood being cut &
felled.
Hills 5 & 4 connected by
a low ridge & both
5 of rock.

Cut 4 is essentially like
cut 3c

Cut 3 shows sand on
W. side, but 2 to 4
from base, at last
60 x 40 days, with
its base just
containing nodules.
The section says in
passing along the W
of road (a little
W. of N.) that
on digging grains be
found similar but
nodules larger &
in evidently lower

The 320 pd is now cut
1, + is about a a
level with the top
of the black soil
layer
The slope to the E. shows
a rocky bank (like it not)

a terrace x part hill
on which school stands
same & be made up of
sand joint clay like
No. 3 in pit, but more
sand. It is very hard,

Aug 22 1906

Dig from Scribner to
Cashmere.
From Scribner (after
leaving river bottom)
the surface is a
gently rolling Terrace.
This extends to Dodge
where hills become
more pronounced
Along wagon road (E. of
RR., about 2 miles

S. 2 strata, 2'
unconformable
blue clay, with
many small nodules
(no examples).
Fossils are found
scattered thru clay
nearly 4 ft. 4"
thick.
Cut is only 4 ft. deep.
The cut is continued along
R.R. south of road
for some 12-15 ft. deep,
10 ft. of yellow loam
stratified & mottled with
blue, in exposure. Cut
is 12 ft. wide.
Some nodules are very
plentiful & some
larger than usual,
rounded & 3 inches.

cut 6

The big cut 3 mi.
E. of Clarkson
Station on N. side E
and about 18-20
ft. of yellow loam
with blue streaks
below & the lower
half is gravel
formation. Alp
the loam streaks
have fine white
On south side
at E. end the cut
is very about 12 ft
deep, & 2 ft. blue
loam with some
nodules &
fossils in exposure
at base. The
next is yellow
loam (like the

Trilobites many species
& some forms
Lima reticulata are
very plentiful in
this section.
S. side
E. end
Sil 2 ft

yellow buff
8 ft. " " some fossils
Blue beds 2 ft

10 ft

The Clinton group has the
same fossils and is
often found with
Lima reticulata
Strophomena rugosa
and Leptaena
rhomboidalis.

Aug. 24 - 1906

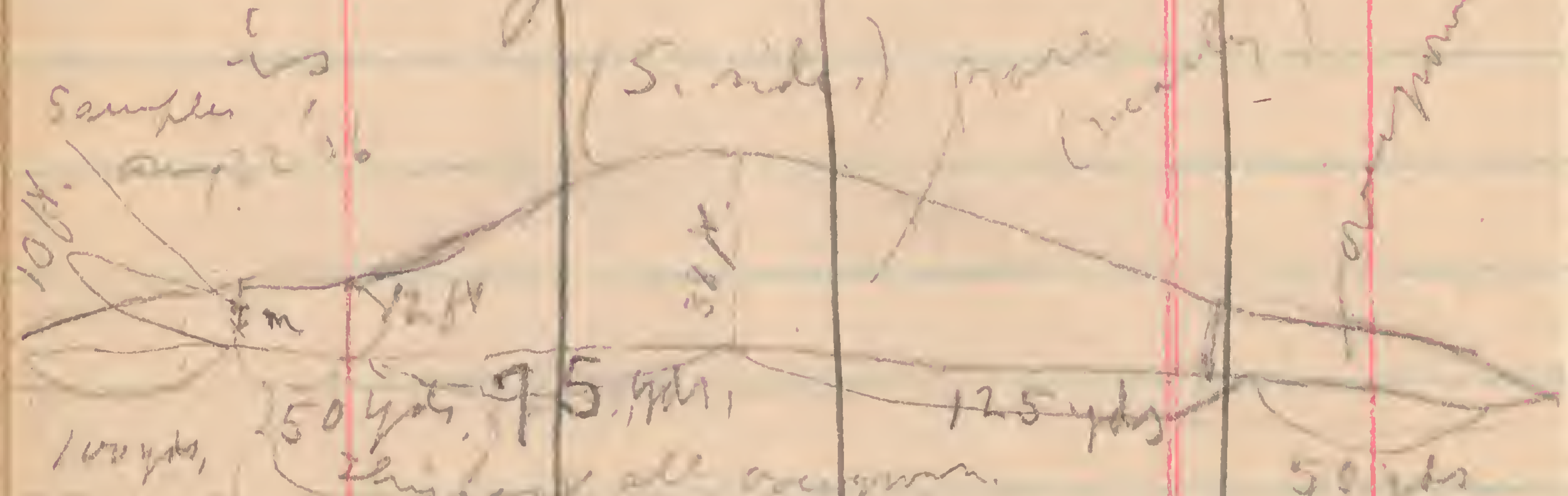
6/

<u>Big divide - cut no. 6</u>

Barometer on track in divide cut reads 465 ft. It had been set to 400 at West P.H.

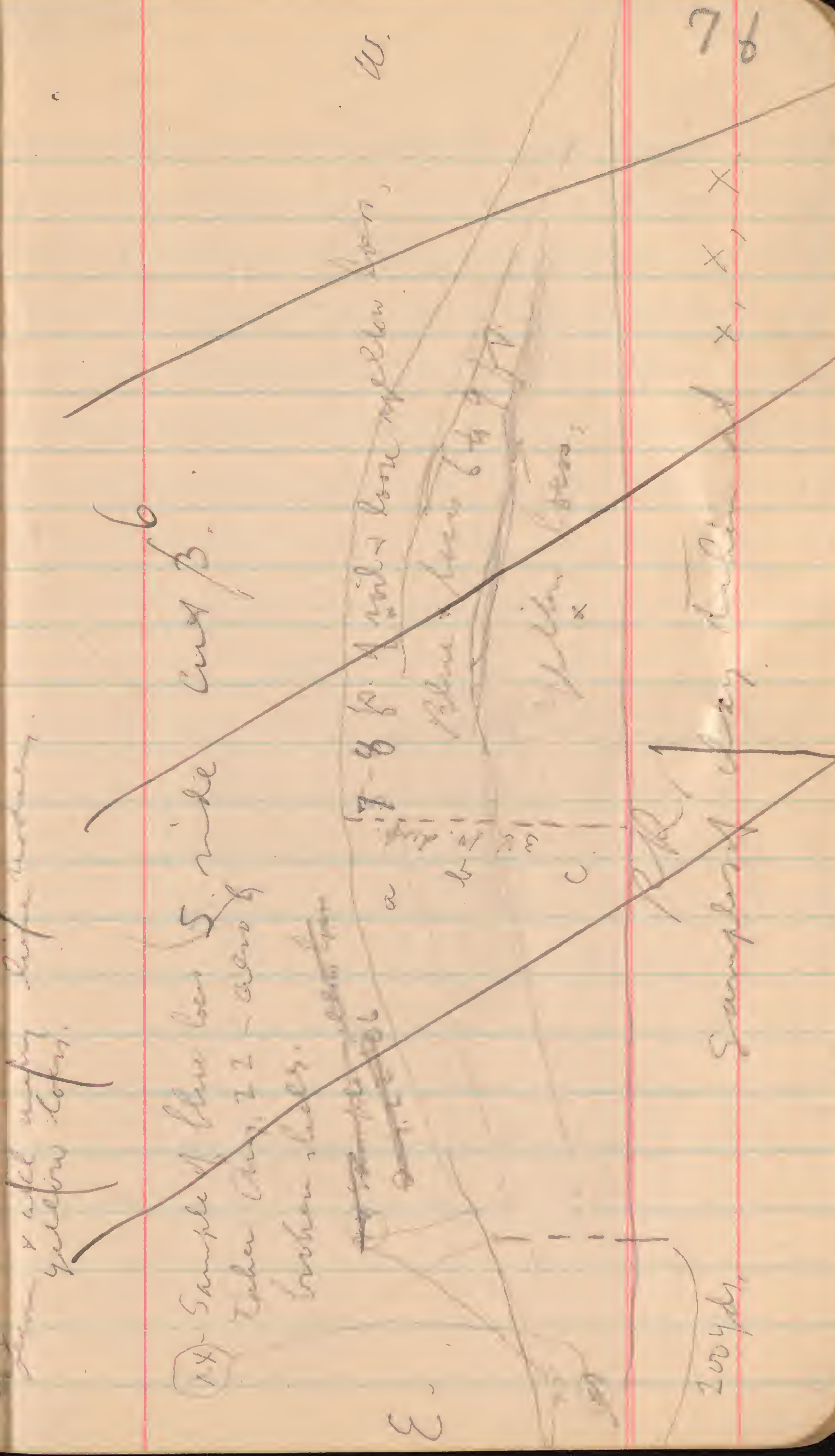
a. is a yellow loose loess with about a foot of black soil. It follows the vertical columns & washes easily.

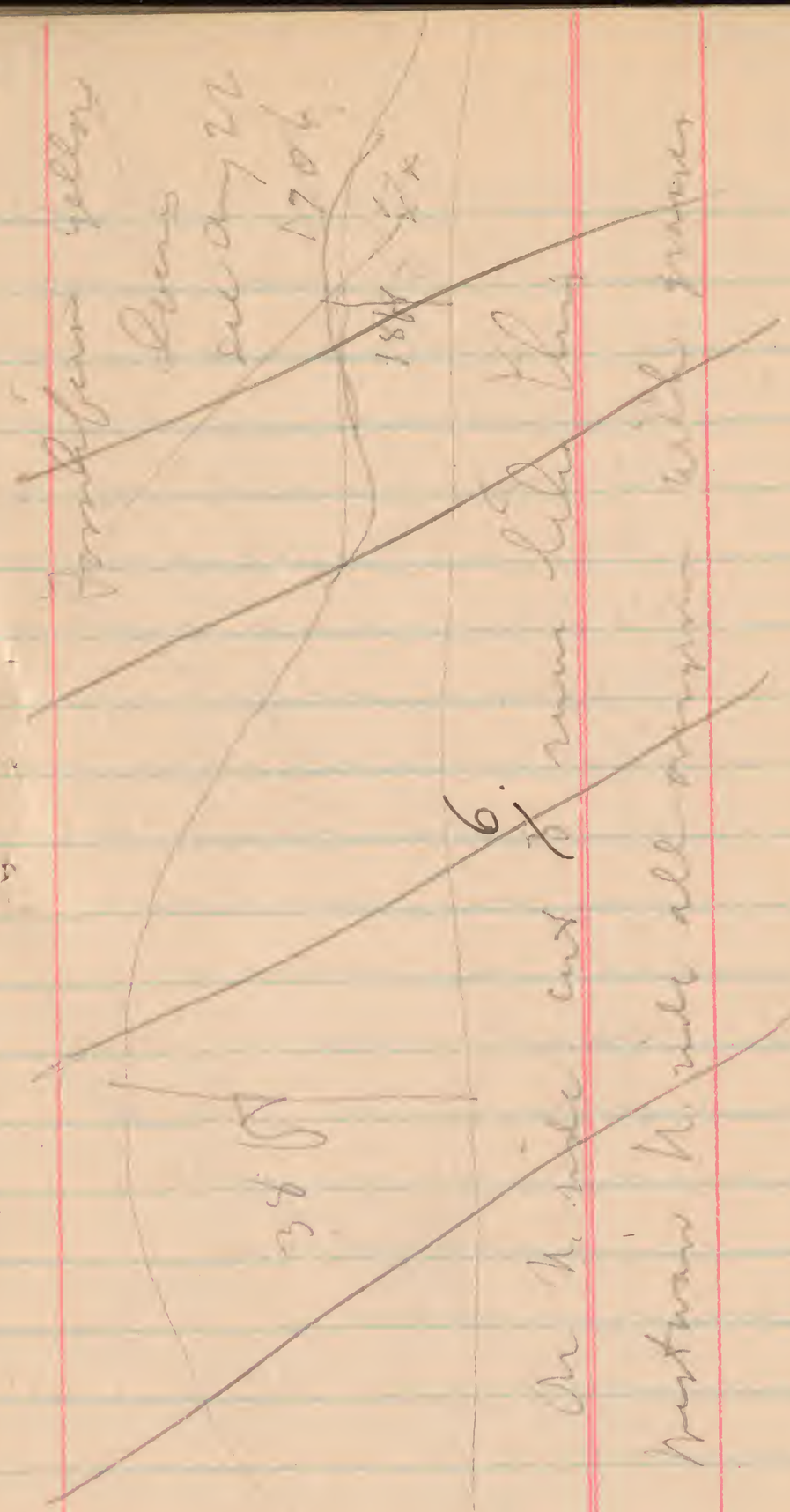
Cut is over 400 yds long. Its best part is (S. side) ...



At m I collected material Aug 22 '06

On N. side the cut is hiding very fossil...





6 - The blue bean is compact, blue (pod) leaved & with very numerous & quite large green tubers also many blue seeds which seem to be more abundant in the yellow bean towards end of pod.
The line between yellow & blue bean is not sharp, one is find between the blue bean & the green yellow, though in a few pods I found an occasional blue in the latter.

C Sample of clay from cliff on middle fork about 5 ft. above KR. A few very fragile fossils were found in this. There are very few, if any, fossils in the brown yellow layer. A little below fragile white layer, & for some distance down blue clay & cylindrical (tube fossil-like) are abundant. In the blue clay iron tubes are very abundant, projecting in from face, & beyond. They end

rather abruptly at a, but the line is not very sharp. a is more compact & with black rust streaks in the brown 2 ft. The whole layer is 7 or 8 ft. deep.

The blue clay is about 6-9 ft.

Sample from a Tube 6 ft. from top

Sample from b Tube 3 ft above base

No fossils in a & very few in upper part of b.

The blue loam in some fields, but the yellow seems more & they are seldom all there. just W. of high land is cut for 50 yds then is a thicker part of blue loam.

The loam on the N. side towards E end, where I collected fossils are 2 thin streaks & bands of blue loam in the rather low down, the upper part is yellow, & with fossils & with many nodules.

from cut 5 to cut 6 is about 500 yds.

Cut 5 cut 6 is about 200 yds long & 12 or 15 ft deep. It shows very many nodules, a few rolled, & them with blue loam & with one small ammonite about 3/4 in. diam.

The upper yellow loam & soil is only about 2 ft deep & the line is quite distinct. The blue loam is 3 or 4 ft. deep & overlies about. The yellow loam

below white clay
not exhibiting pure
blue clay.
The blue layer
has greatest
amount of blue
pebbles &
is 3 ft. thick.

Cut 5.

yellow clay 1 ft.
Blue clay 14 ft.
Yellow clay
200 yds.
The slide seems to be
chiefly, if not wholly,
the same yellow clay
the blue clay mixed
& drops westward.

5
From cut 4 to cut
4. 5 is about 150 yds.

4
Cut 5 is 150 yds beyond
road S.W.

6
The top of hill at cut 3
is 120 ft. above
plain at Clarks

Spent night at
Harder House in
Scituate.

1906.

Aug. 25-

Left at 8 am. for Fremont & Blair. The bluffs skirting valley between Scribner & Hooper, on S. side, are low, & abrupt as if whittled off. Nearer Hooper they become higher & more rounded. There are areas (in couple places) covered only with low grass. This would not like Symplocos cover. These low bluffs, with sand everywhere in evidence, extend

to near Nickerson, where they recede back & flatten out.

From beyond Arlington to Blair the country is strongly rolling Kansan.

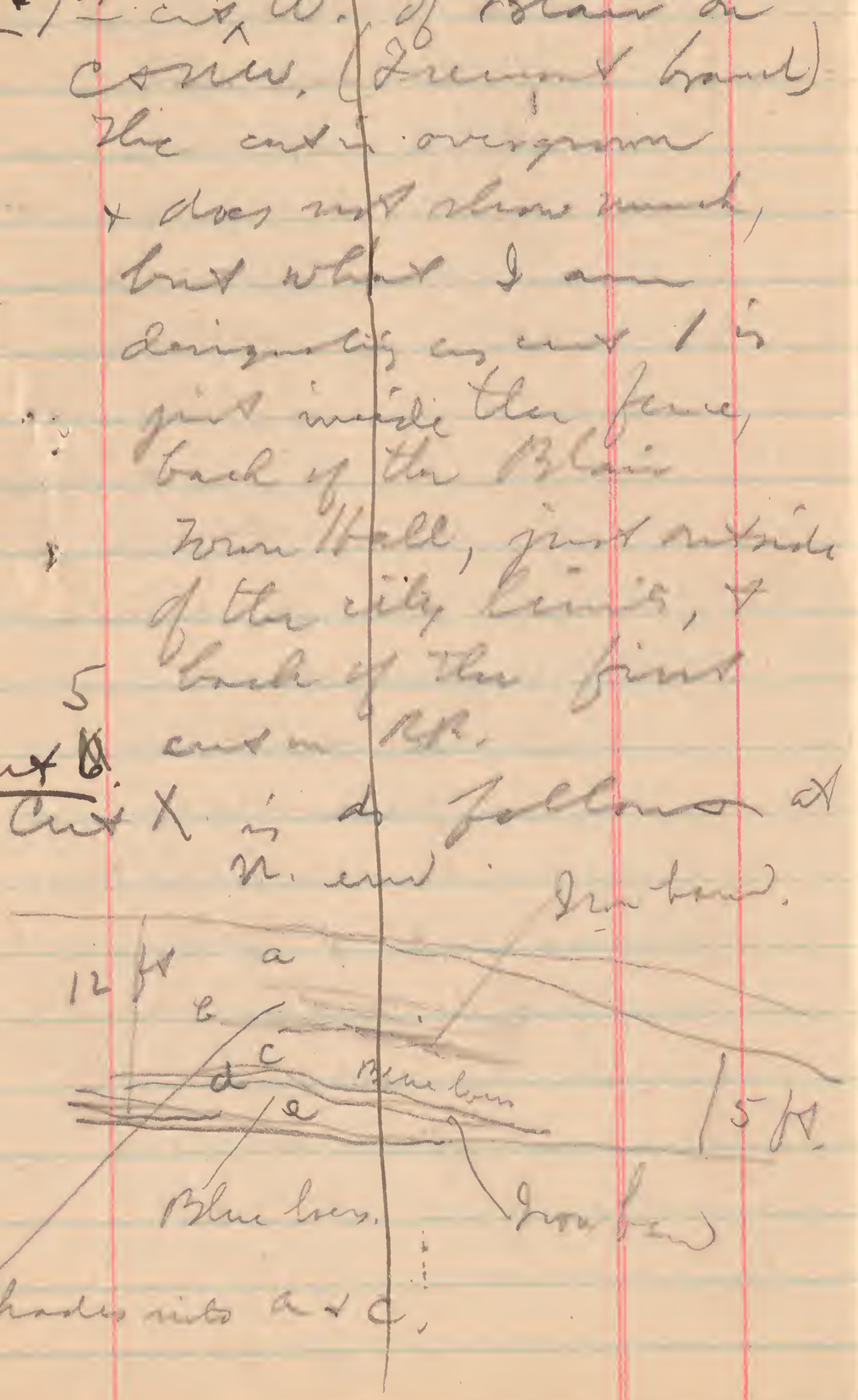
The first big cut beyond Arlington, & within about two miles, ~~Kansan~~ shows loess blue loam (thick) & sand & gravel yellow by a narrow & iron band which follows contours.

There seem to be thick & like works at Kansan

.5 Blair, Neb Aug. 25 '06

Cut 1/1 cut W. of Blair a
cornw. (Fremont Sand)
The cut is overgrown
+ does not show much,
but what I am
designating as cut 1 is
just inside the fence,
back of the Blair
Town Hall, just outside
of the city limits, +
back of the first
5 cut on R.R.

Cut 6.
Cut X is a fellow at
N. end.



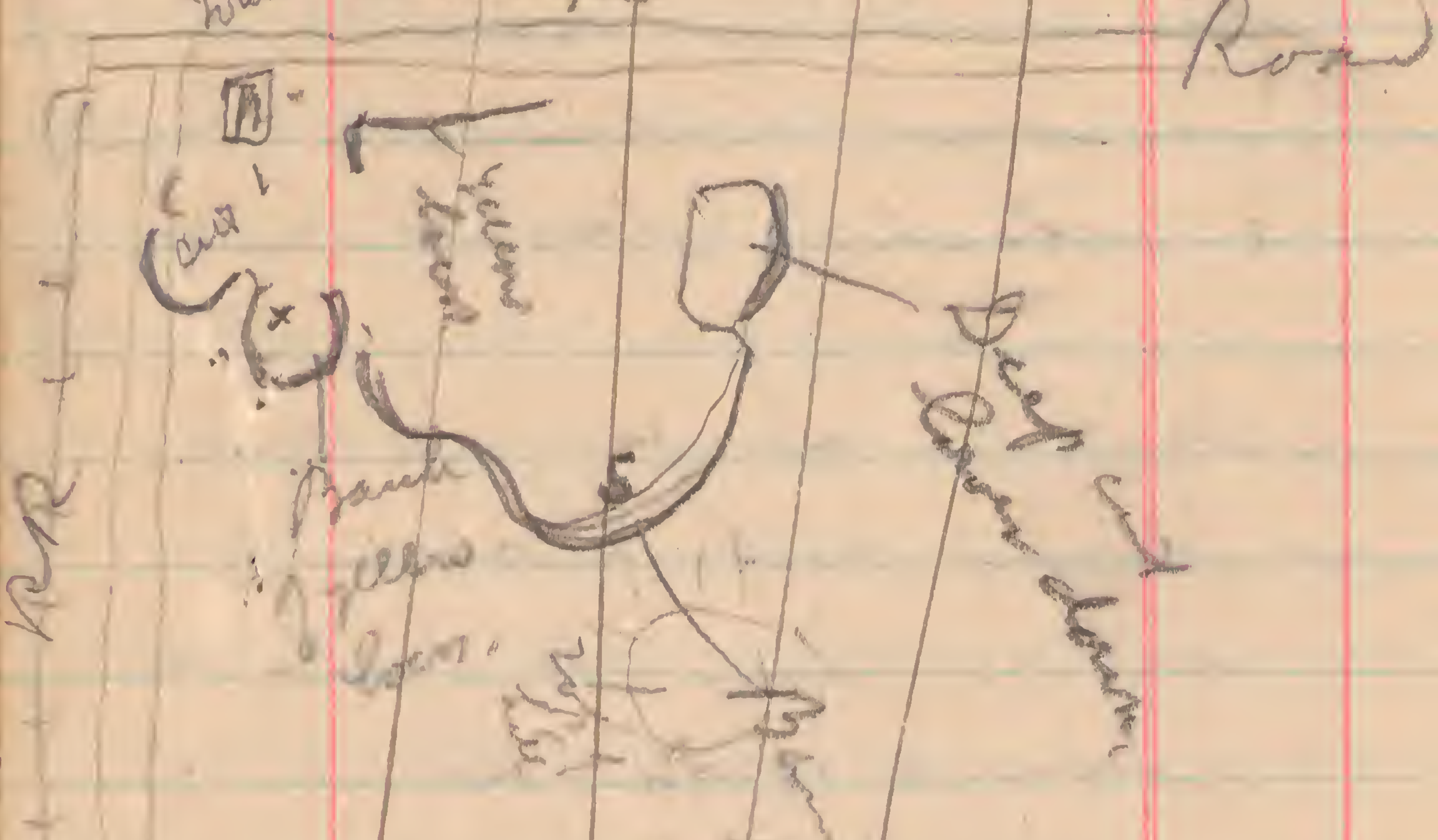
D Detail

a shades upward
into black soil. It
feels some like peat
clay. It has a few
pebbles, (see sample)
b. is intermediate light
than a + with iron tubes
c. is blue clay with
iron band in upper
part, but very shading
up into b.
d = iron band.
e = blue clay with
Bowlders (large)
+ fossils S. of
contains many fine
nodules.

a = 4-6 ft
b = 1-2 ft.
c = about 3 ft.
d = 2-6 in.
e = 1-2 ft. uppermost.

No shells were found
in this part.
Samples of a, b &
c were taken.

E - plain
Forn. Hall
D. Michigan



Bank of yellow loess 20 ft high
15 ft
took sample from top
[illegible] through
[illegible] all
a few shells.

In the other parts of cut
1 there is yellow loess,
thick toward top of
hill, streaked horizontally
with blue loess,
nodules scattered through
& shells few & scattered.

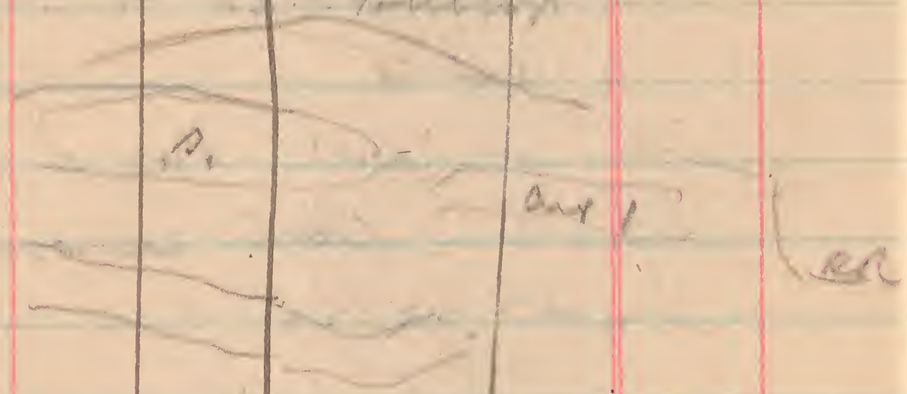
At x, no. a of cut 1
thin out & some
disappears, & yellow
loess & soil, with
small nodules in
upper part of former
appears at top.

(a) has pebbles in it
only low down toward
the end of cut.

✓✓ Photos 27 & 28 show
cut [illegible] & several bands

The yellow loess shows
banding also when
broken.
The blue loess is
scarcely shows it.

The hills rises only
about 15 ft. above
top of high loess bank
at S.
The hill top is scarcely
more than 60 ft. above
the RR.

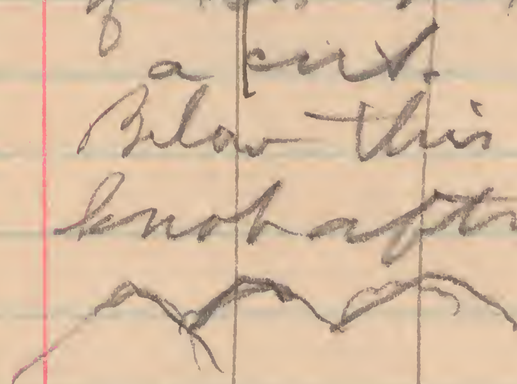


Bricks made from
the thick yellow loess,
chiefly from S.

Blair to Florence & Ord

Below Blair the
hills are lower, &
the points less round
ridges.

This is frequently
3 or 4 mi. down then
is a big vertical wall
of loess next to RR.—
a cut.
Below this are rounded
knobs often another



Then road cuts
away from bluffs
behind & 50 to 100 ac.

The hills from Blair to below De Soto are pretty well timbered especially southward. The timber is chiefly known here & the hills rise above it.

Some distance below De Soto (before reaching Calhoun) we cut into the hills - here quite low, but showing higher & next. Yellow clay shows in cuts — not very deep.

Calhoun is in quite a valley with bluffs above in town & at edge. They are rounded hills.

but there are not the very bluffs.

There seems to be a good deal of timber in valleys toward river & also to right & R R.

The seem to be traveling on a sort of bench, with higher hills to right near Coffman's, run in among higher hills, & curious so to speak.

Trees below

Cottonwood — Salix discolor
Buttonwood — wild plum
Red elm — Salix Long. Pyr.
Sumach
Crataegus mollis
Am. elm.
Broad
Hazel
Boxelder.
Walnut
Crab.
Amelanchier
Cornus candidissima
Wild Grape.
Ironwood?
Ribes Missouri
Wild Cherry
Choke cherry.
Salix amygdaloides?
Sandbar cornelian

Co. Bluffs & Glenwood

Aug. 28. 1906

Left Co. Bluffs at 1 PM

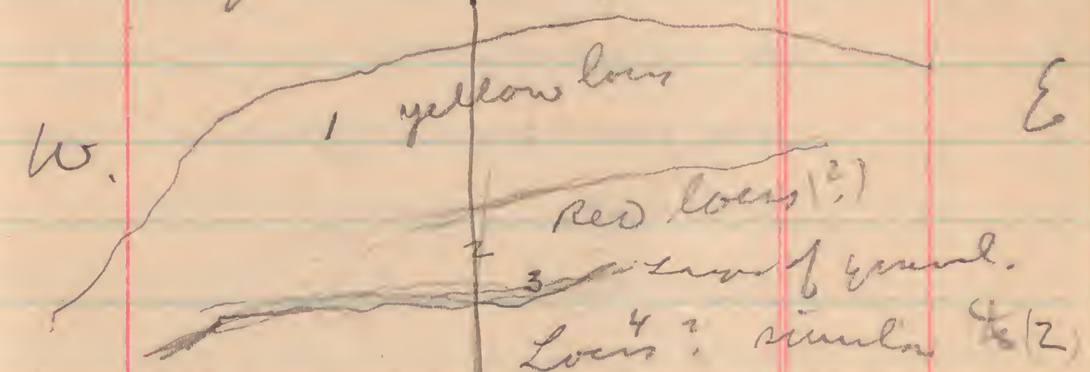
✓ took picture of road cut looking S. E., WNW intersection of roads in sec. 33

Lewis Mfg., Post. Co.

West N. & road about ½ mi.

A gully is here cut in hill to right (E.) of road. It slopes to

Following



See samples of 1, 2, & 4.

(3) contains many dark pebbles, mostly worn bedded. It runs to dis ribbon to right

(1) is the ordinary loess & contains a few fossils & a few rounded nodules. I also saw 1 snail, gastropod (recent) on bank top (1).

The line between 1 & 2 & 2 & 3 & 3 & 4 and guide (very) sharp & 4 does not show continuation.

2) shows signs of oblique as if about to slip. The gravelly-loess is oblique & rises from 8 to about 12 or 14 ft above road, which is about 15' or 18 ft above ground below. It may have been washed from one

above, or may be an old beach.

No. 2 is 10 1/2 ft. & more & ground ft. of 4 ft at base.

(3) is 2 to 8 in wide. I shown about 10 ft but evidently is thicker where. As the road the gravelly loess is about 2 ft to 4 ft above road —

(3)

— a little farther on the road, at bank by road shows about 12 ft of yellow loess only. Except about 2 ft of red loam at SW end of very base.

The next cut through cross-roads (S.E.) shows gravelly loam about 12 ft. above road also new dyke of loam. This is heavy & very tough to cross roads.

A 3rd cut, near cross-roads shows little but yellow loam. Obscured by slips.

Going S. from cross-roads the 1st exp. near roads shows coarse bed of gravel. The 2nd road cut shows a layer running for 4 chains. The 3rd near gravel-pit is thin.

A couple of miles S of C. line in hills is shown gravel.

In the exposure at crossroads 1 mile S. of C. line on E. side of road, about 10 feet of drift shown, with gravel at base & lower half light bluish joint clay with round iron concretions. Some of the boulders along there bluish

measure 4 x 5 in. diam, & are angular. The topography all along here is "wind tabs," Near N. line of sec. 17 the hills are even more abrupt at road & gravel pits & both brook & swamps, etc.

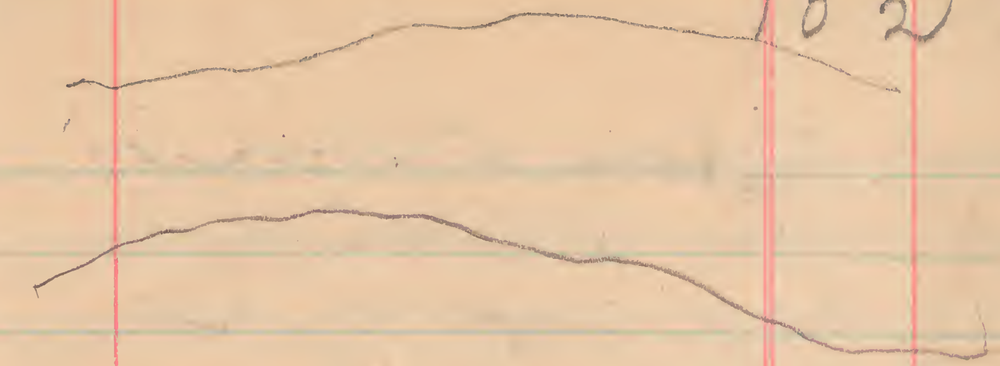
At the crossroad in sec. 17, 2½ mi. S of

Co. line the drift shows shaley ss a number of ft. there are lime ss very long boulders, mostly red. The drift rises at least 35 or 40 ft above the bottom, 25 or 30 ft. above the road. Red loam also shows in many places & also in cultivated fields yellow loam. The drift is regular in character

Loess.

Drift.

On all these hills "Kats Kaps" are common



Loess

Drift.

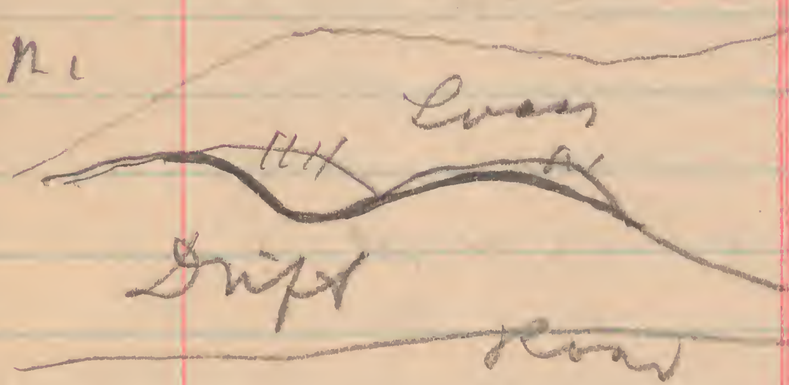
Rock.

Fossils very abundant & extend up at least 18 ft,

Cross road 2½ mi S. of Oakland.

This loess is in places lighter brown, a little darker than usual loess, but above it is unusual & shows shells. The shells

shale not above
loess brown clay
+ yellow. av
18 ft above road
then are gullied slopes
Big ravine one
about east.



Rock showed in bottom
bottom crop road
was wooden

Cut of Illinois Central R.R. 1 mile
N. of Kenton, Hardin Co.

6 ft. Loess a

3 to 6 ft. b

3 a bed in clay

3 to 2 ft. d

Tulum
drift

Drift Loess bowlder
(a few)

a = yellow loess, with
abundance of fossils
+ about 6 or 8 on very
hard nodule iron — ∨
containing shells throughout
in bottle fossils ∨

b. Is a blue joint clay

c. Has lots of iron + Petroleum
in ∨ bottom are limestone

Plateau - horizontal.

The Missouri has come close to bluffs. On opposite side are sandbars (extensive) & clouds of dust & sand were continually swept along. It was a windy day & the valley was full of dust.

Off South & beyond drift shows abundantly in some places very loud

Often

Pebbly clay

Chocolate joint clay

Blue joint clay

Drift

Blue joint clay in one place.

Bluffs just beyond Pacific City are about 40 ft high & seem to be all yellow loess with a few fragments of glacial in lower part the loess is lined & laminated with iron. It also contains nodules. There seem to be here, as elsewhere toward Glenwood, a reddish tint to the uppermost several feet (2-5) of loess.

About ½ way up the Glenwood hill (from Pacific City), on the W. side, I collected a small box of shells. They were in yellow loess, -

This being like yellow loess generally in this part, quite light yellow, with iron & bleach horizontal streaks, and a very few nodules. At this point about 7 ft. were exposed. All along the road there is a cut from 3 to 8 ft. deep, the road here ascending a hill fully a mile long. I notice scattered shells & fragments (Succinea) nearly to the top of the hill.

In place the terrace S of about a mile S. of Mills co. N line

there seem to be a considerable amount of scrubby timber, - burr oak, hickory, sycamore, ash, cottonwood (low down) etc. etc.

1906

Expenses - Geol. Surv.

Voucher 4301

Aug. 3 -
Express, barometers $ .60

Aug. 8
RR. fare to Des Moines 3.64
Subsistence, " " .75
Drayage " " .25
RR. fare to Sioux City 5.78

Aug. 9.
Subsistence, en route .50
" , Sioux City .50
Small file 10, pliers 25 .35
Drayage - Sioux Cy - .30
RR. fare to Ponca 1.00

Aug. 11.
Hotel (Commercial) Ponca 1½ day 3.50
RR. fare to Sioux City 1.00
Drayage " " .30
Boxes + basket " " .45
Lunch " " .45
R.R. fare to Westfield, Ia. .83

Aug. 12
Lunch in country .25

20.45

Aug. 13.
Livery + drayage - Westfield $ 3.00
West Hotel " 2 men. 2.00
RR. fare to Sioux Falls. 1.91
Lunch, Canton. .30
Transfer baggage, Sioux Falls. .25
RR. fare to Preston 1.25

Aug. 14
Hotel, Preston, Calumet 3 days 1.50
RR. fare to Lawrence .80
Transfer at Lawrence. .25

Aug. 15
Hotel Manston " 2 days 1.00
RR. fare to Sioux Falls .90
Lunch - Sioux Falls. .35
RR. fare to Beaver Creek .65
Lunch at " " .25
RR. fare to Sioux Falls. .65
Lunch. " " .35
R.R. fare to Canton .55

Aug. 16.
Room at " .50
Lunch " " .25
RR. fare to Sioux Falls .55
Lunch .35

38.83

$38.06

Aug. 17—

Hotel Zeta, Sioux Falls, $1.00
RR. fare to Hawarden 1.85
Lunch " .40
Basket " .10
Transfer " .25
RR. fare to Remington 1.38
Transfer to Niobrara .50
RR. fare to Verdigre, Neb. .35

Aug. 18,

Livery - McNeil, Verdigre 1.50
Explosion on bicycle 2.00
Lunch .25

Aug. 19

Hotel (Mrs. Schmit) Verdigre 1.50
Lunch .25
RR fare to Wood Pk. 2.95
Drayage (bike) .25

Aug. 20

Lunch, Wood Pk. .25

Aug. 22

Hotel (Neligh) 1½ da. 3.00

$55.84

55.84.

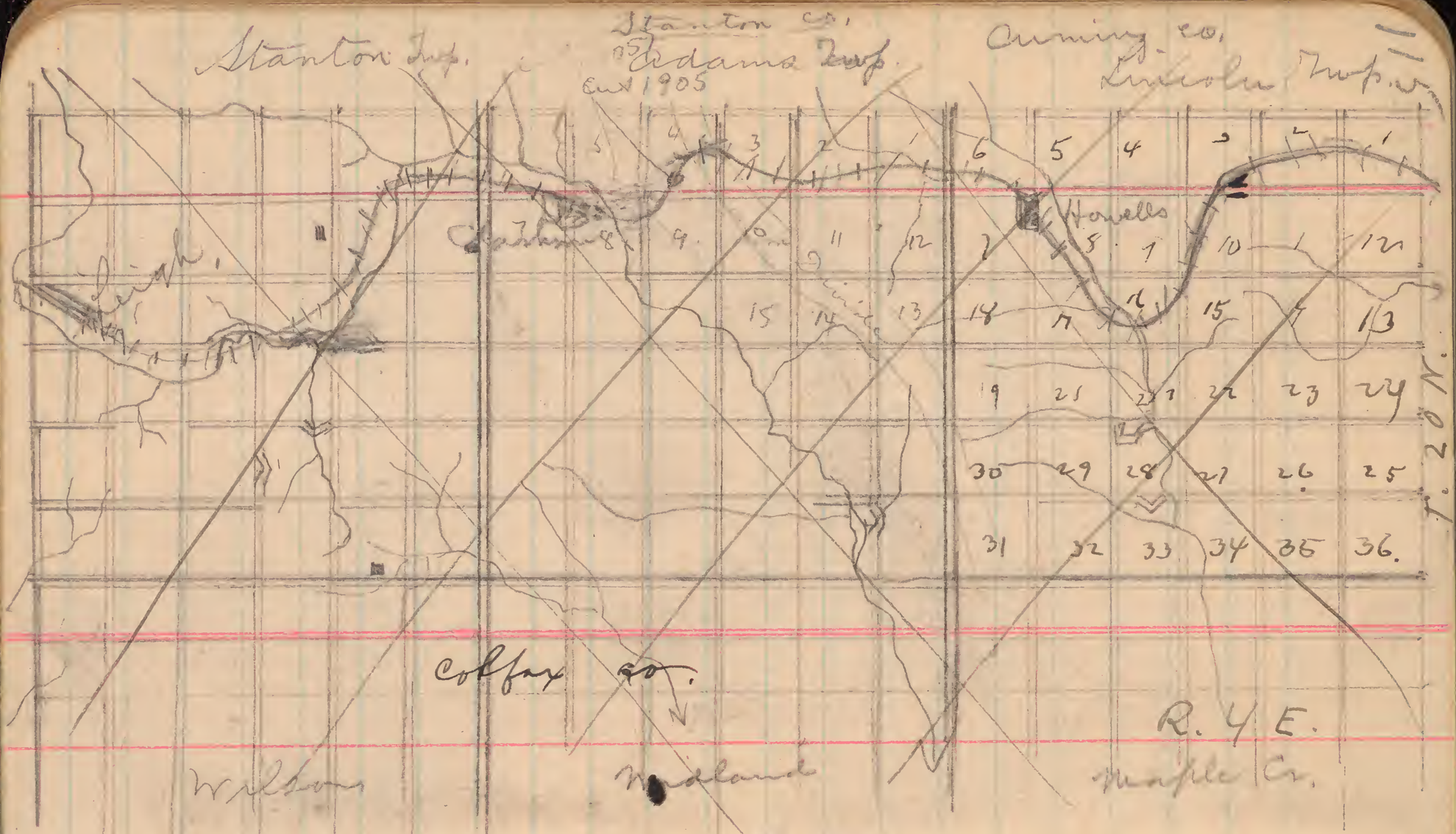
RR fare to Scribner .37
Drayage (bike) " .25

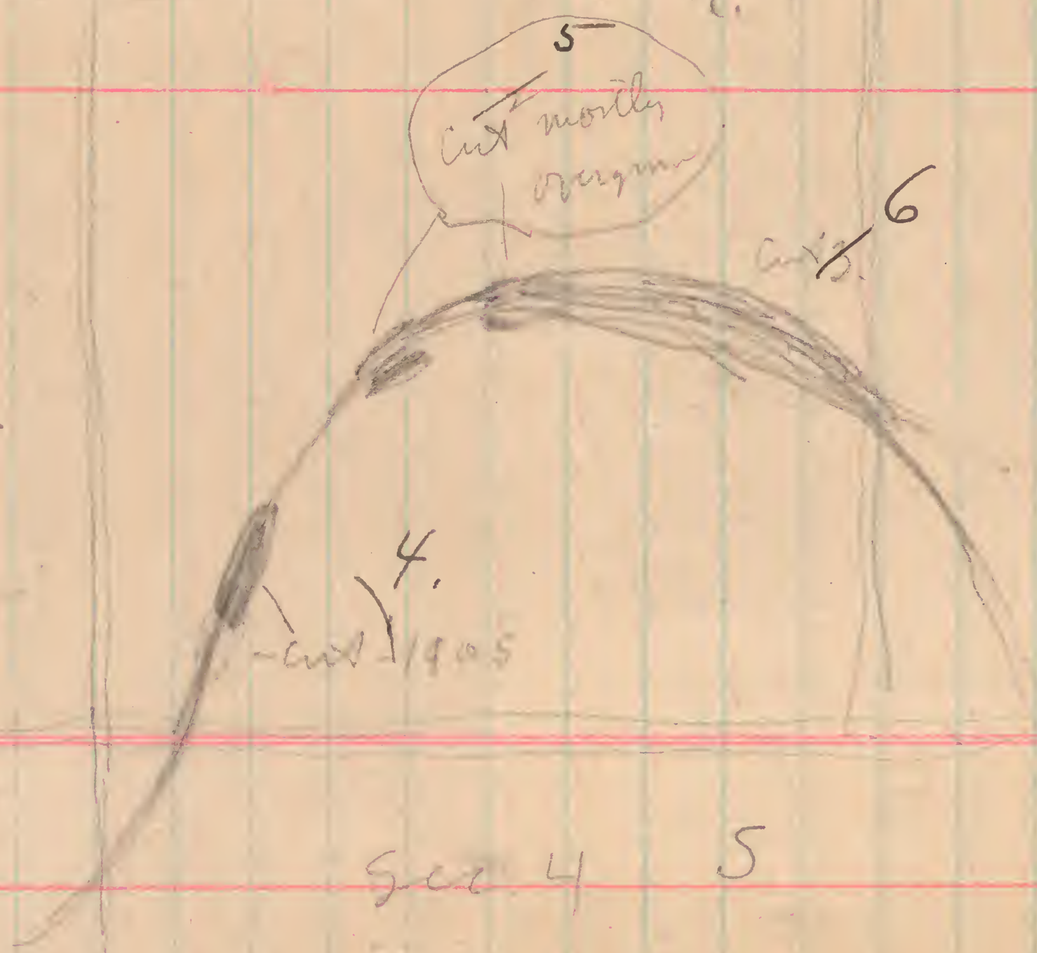
Dinner - Dodge, Neb .25
Lunch - Howells, Neb. .25
Aug. 24 - Hotel (Nob Hotel) Clarkson, Neb.
RR. fare to Schuyler, Neb. .85
Drayage (bike) (to Oakland) .35
Aug, 25 - Hotel (Harden House) 1.00
RR. fare to Scribner & Blair 1.45
Lunch - Blair .40
RR fare to Council Bluffs 1.25

Aug. 26—

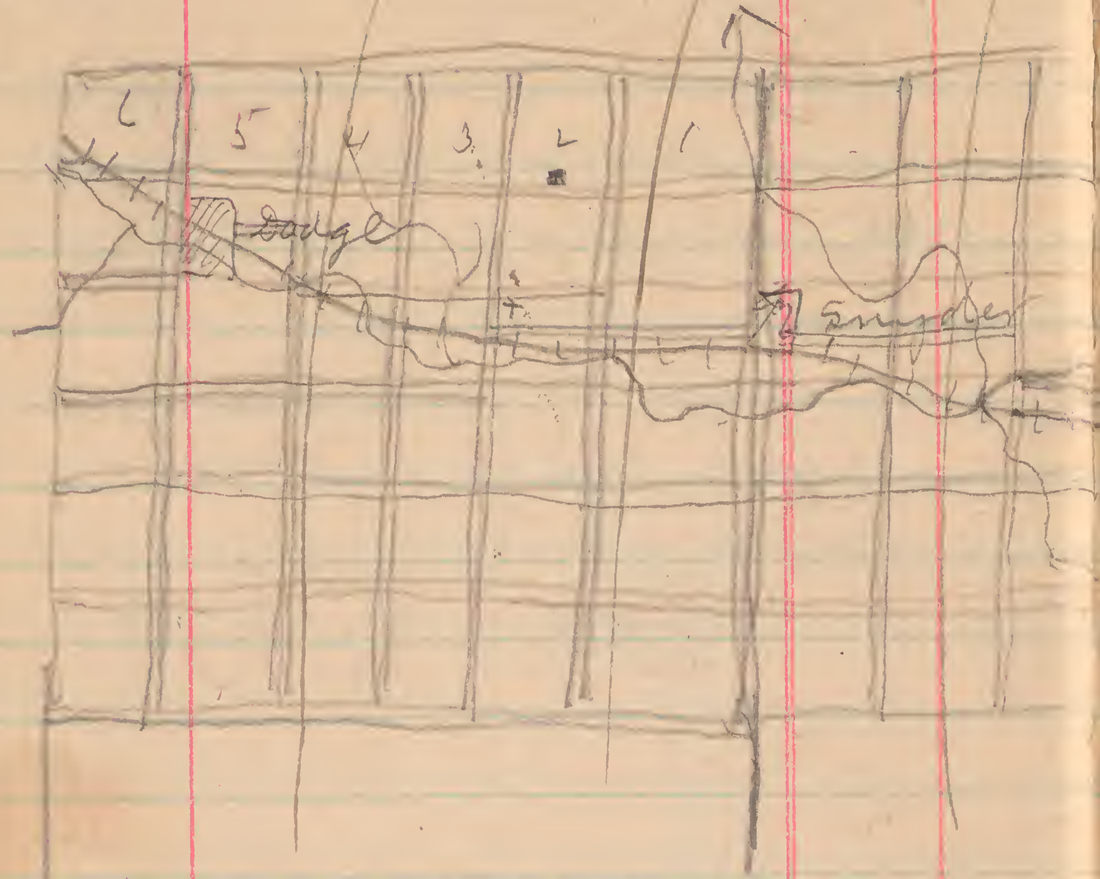
Hotel (Kiel) Co. Bluffs 1.00
Car-fare .20
Aug. 28 - 2 Lunches Co. Bluffs .50
" 29 - Commercial Home (Glenwood) Iowa 1.50.

7.60
55.84
63.46


Stanton Twp.
Stanton Co.
Adams Twp.
Cut 1905
Corning Co.
Lincoln Twp.
Howells
T. 20 N.
Colfax Co.
Wilson
Midland
R. 4 E.
Maple Cr.


S
Cut mostly
Virgin
Cut 5.
6
4.
Cut 1905
Sec 4
5

N



Photos U.S.P.A. Lab
Aug. 21, 1906

✓ 5. View of dump line looking N. from top of hill 5.

✓ 6. Dump area S. from top of hill 4 Show clump of trees in bottom valley.

Packed at Verdigre
in box 3
Beginning ~~x~~ ~~to~~ -

28
27
xx
x
B
A
32
31
V
U
n } n.g. spoiled
m }
22 } n.g. "
21 }

Photos

Aug. 15-1906 X - Mountains, looking across Big Sioux valley & Pemulton Sioux Falls.

XX - Looking down Big Sioux valley a short distance in the Big Sioux - walls of Sd. Q.

Aug 16-1906 B - Cut 1 (V-L in background on R. side) along RR, Cent. Pk. of Sioux Falls.

31 - Cut 2 Neg Sioux falls.

32 Cut 1 " "

Aug. 18-1906 V. View from morning hill 300 ft. above Vandykes.

To S.E. along moraine

V- View of moraine S- also bowlder gorge.

Key Ch

Pebbly Vals

1 1/4

5 1/4

2 1/4

4

3

2